

REMARKS/ARGUMENTS

Favorable reconsideration of this application in light of the following discussion is respectfully requested.

Claims 1-11 are presently active in this case.

The outstanding Office Action finally rejected Claims 1, 4, 10 and 11 under 35 U.S.C. § 103(a), as unpatentable over Rossi et al. (U.S. Patent No. 4,664,969) in view of Bolt et al. (U.S. Patent No. 5,807,798) further in view of Bell et al. (U.S. Patent No. 7,138,084) and the admitted prior art, pages 1-2 (APA). Claims 2-3, and 9 were rejected under 35 U.S.C. § 103(a), as unpatentable over Rossi et al. in view of Bolt et al., the APA, Bell et al. further in view of Mills (U.S. Patent No. 5,143,777). Claim 5 was rejected under 35 U.S.C. § 103(a), as unpatentable over Rossi et al. in view of Bolt et al., Bell et al. and further in view of Tawil et al. (U.S. Patent No. 5,725,955).

Briefly recapitulating, Claim 1 is directed to a method for passivating the contact surface of a refractory container made mainly of mullite, wherein said refractory container is configured to receive molten titanium. The method includes several steps, in particular a step of applying, to the contact surface of the mullite container, a coating comprising 50% to 70% by weight of alumina flour ( $\text{Al}_2\text{O}_3$ ) filler and 30% to 50% by weight of binder. ***The binder comprises 50% to 60% by weight of aluminum chloride  $\text{AlCl}_3$***  dissolved in 40% to 50% by weight of water. Other required steps include drying the coating; and firing the container in an oxidizing atmosphere between 1450°C and 1550°C for at least 20 minutes thereby obtaining a coating on the contact surface of the refractory container that is inert to the molten titanium.

In response to Applicant's arguments filed December 18, 2007, which are hereby incorporated by reference, the outstanding Office Action correctly stated that the pending

claims “have greater percentages of  $\text{AlCl}_3$  in water than the binder of the Prior Art.”<sup>1</sup> The outstanding Office Action then states: “However, applicant’s specification shows no criticality or unexpected results, beyond normal process parameters readily ascertainable by one of ordinary skill in the art, example optimizing, viscosity, liquid level, etc.”<sup>2</sup> Applicant respectfully disagrees because the specification shows the criticality of the claimed percentages of  $\text{AlCl}_3$  in water. Specifically, the specification shows that the claimed percentages of  $\text{AlCl}_3$  in water provides the unexpected (and claimed) result of obtaining a coating on the contact surface of the refractory container that is inert to the molten titanium. For example, at page 3, lines 5-14, the specification states:

*The inventors have found that an aluminum chloride solution exhibits a binding power comparable to the conventional suspension of colloidal silica. During the oxidizing firing, the aluminum in the binder is converted to alumina, crystallizing with the alumina of the filler, while the chlorine thus liberated escapes in gaseous form. This produces an alumina contact layer that is perfectly pure and able to enter into contact with molten titanium without chemically reacting with it, thereby solving the first problem.*

Other passages of the specification can be cited. For example, when discussing the Admitted Prior Art (APA), which is being applied in rejecting Claim 1, the specification states at page 2, lines 21-24, that a first problem with Prior Art methods is to provide, on the contact surface of ceramic mullite containers, a coating that is *perfectly inert to molten titanium alloys*. Thus, the applied prior art, i.e. the APA, establishes that one of ordinary skill in the art did not have a solution to provide, on the contact surface of a mullite container, a coating that is perfectly inert to molten titanium alloys. At page 2, lines 30-38, the specification states that Applicant found a solution to “solve this problem,” and that this solution includes the claimed step of applying “to the contact surface of a coating comprising 50% to 70% by weight of alumina flour ( $\text{Al}_2\text{O}_3$ ) filler and 30% to 50% of binder, this *binder*

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<sup>1</sup> Outstanding Office Action at page 5, lines 16-17.

<sup>2</sup> Outstanding Office Action at page 5, lines 16-19.

*itself comprising 50% to 60% of aluminum chloride  $AlCl_3$  dissolved in 40% to 50% of water.*

None of the applied prior art teaches or suggests the benefit and the expectation of obtaining a coating that is inert to molten titanium alloys and thus the advantage of using a binder with  $Al_2O_3$  in a mullite container configured to receive molten material.

Therefore, Applicant respectfully requests reconsideration of the rejection, at least because Applicant's specification shows criticality and unexpected results for the claimed percentages of  $AlCl_3$  in water.

Further, Claim 1 is rejected based on the proposition that "it would have been obvious to one of ordinary skill in the art at the time the invention was made to have applied the coating of '969 using an aluminum chloride binder on the mullite as taught by '798 and specifically the mullite container of the APA to eliminate the detrimental silica binder and replace it with an inert alumina binder."<sup>3</sup> Applicant respectfully disagrees because there is no evidence that one of ordinary skill in the art would have found it obvious to use an aluminum chloride binder instead of silica on a mullite container. This step was taught by Applicant, and is not found in the prior art, nor within the knowledge and creativity of ordinary skilled artisans. The APA reports that it is known that a coating with silica is detrimental on a mullite container. '969 teaches a coating with aluminum chloride but nothing about mullite containers, nor any benefit of using aluminum chloride in coatings applied on mullite containers. '798 does not teach anything about aluminum chloride in binders for coatings applied to mullite containers, nor any benefit of using aluminum chloride in coatings for mullite containers. Thus, the only evidence of record is that, at the time of applicant's invention, one of ordinary skill in the art used silica in binders for coatings applied to mullite containers and that there was a problem associated with this method. However, nothing in the prior art suggests that one of ordinary skill in the art would have turned to binders with

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<sup>3</sup> Outstanding Office Action at page 3, lines 13-14.

aluminum chloride in order to solve the problem that exists with respect to mullite containers. Even assuming that one of ordinary skill in the art would have somehow turned to the '969 patent to solve the problem, the end result would have been a process that is not the same as the one claimed because, as acknowledged by the Office Action, the percentages of  $AlCl_3$  in the claimed binder are greater than those of the '969 patent.

As the CAFC recently commented, "flexible TSM test remains the primary guarantor against a non-statutory hindsight analysis such as occurred in this case. *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007) ("[A]s the Supreme Court suggests, a flexible approach to the TSM test prevents hindsight and focuses on evidence before the time of invention.")." <sup>4</sup> In the present case, absent improper hindsight reconstruction based on Applicant's claims, one of ordinary skill in the art would not have found it obvious to apply, to the contact surface a refractory container made mainly of mullite, a coating comprising 50% to 70% by weight of alumina flour ( $Al_2O_3$ ) filler and 30% to 50% by weight of binder, wherein the *binder comprises 50% to 60% by weight of aluminum chloride  $AlCl_3$*  dissolved in 40% to 50% by weight of water.

Consequently, in view of the above remarks, no further issues are believed to be outstanding in the present application, and the present application is believed to be in condition for formal Allowance. A Notice of Allowance for Claims 1-11 is earnestly solicited.

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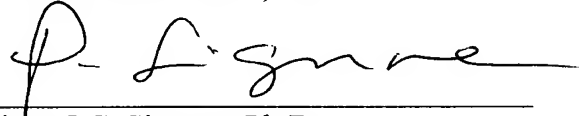
<sup>4</sup> *Ortho-McNeil Pharmaceutical, Inc. v. Mylan Lab.* 2008 U.S. App. LEXIS 6786 (CAFC, 2008)

Application No. 10/825,321  
Reply to Office Action of March 21, 2008

Should the Examiner deem that any further action is necessary to place this application in even better form for allowance, the Examiner is encouraged to contact Applicant's undersigned representative at the below listed telephone number.

Respectfully submitted,

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MAIER & NEUSTADT, P.C.

A handwritten signature in black ink, appearing to read "P. J. Signore", written over a horizontal line.

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